

Claims:

This listing of claims replaces all prior versions and listings of claims in the application:

Listing of Claims:

1. (Previously Presented) A method for resampling a first image sampled on a first sample grid comprising:

computing a filter for applying to the first image, including computing a spatially quantized representation of the filter wherein a degree of spatial quantization of the filter depends on one or more factors including a measure of scale relating the first sample grid and a desired sample grid; and

storing the spatially quantized representation of the filter in a data structure comprising a location array that includes a plurality of elements representing fractional pixel locations based on a spatial quantization factor, wherein each element of the location array points to a sample array of filter values.

2. (Original) The method of claim 1 further comprising:  
computing a desired image sampled on the desired sample grid, including computing samples of the desired image according to an application of the spatially quantized representation of the filter to the first image.

3. (Original) The method of claim 1 further comprising:  
accepting data characterizing a geometric transformation relating the first sample grid and the desired sample grid; and  
computing the measure of scale from the data characterizing the geometric transformation.

4. (Original) The method of claim 1 wherein computing the filter includes selecting the number of spatial samples of the spatially quantized representation of the filter.
5. (Original) The method of claim 4 wherein computing the spatially quantized representation of the filter includes computing values of the filter each associated with one of a number of equal spatial domains of the filter.
6. (Original) The method of claim 1 wherein computing the filter for applying to the first image includes selecting a parametric family of filters.
7. (Original) The method of claim 6 wherein computing the filter for applying to the first image includes determining parameter values for the filter.
8. (Original) The method of claim 7 wherein determining the parameter values for the filter includes computing the parameters values based on factors including the measure of scale.
9. (Original) The method of claim 1 further comprising accepting a user input specifying a characteristic of the resampling, and using the user input in the computing of the filter for applying to the first image.
10. (Original) The method of claim 9 wherein accepting the user input includes accepting an input related to a characteristic of the desired image.
11. (Original) The method of claim 10 wherein the characteristic of the desired image includes a visual characteristic of the desired image.
12. (Original) The method of claim 9 wherein accepting the user input includes accepting an input related to a processing characteristic for the resampling.

13. (Original) The method of claim 12 wherein the input related to the processing characteristic includes an input related to a processing speed.

14. (Original) The method of claim 1 wherein the degree of spatial quantization of the filter depends on factors that further include characteristics of a computation device for performing the resampling.

15. (Original) The method of claim 14 wherein the characteristics of the computational device include a memory size characteristic.

16. (Original) The method of claim 15 wherein the memory size characteristic includes a cache memory size.

17. (Original) The method of claim 14 wherein the characteristics of the computational device include a processor characteristic.

18. (Previously Presented) A method for resampling a first image sampled on a first sample grid comprising:

accepting data characterizing a geometric transformation relating the first sample grid and a desired sample grid;

determining a measure of scale relating the first sample grid and the desired sample grid from the data characterizing the geometric transformation;

computing a filter for applying to the first image, including selecting characteristics of the filter according to the determined measure of scale and computing a spatially quantized representation of the filter, wherein a degree of spatial quantization of the filter depends on the determined measure of scale ; and

storing the spatially quantized representation of the filter in a data structure comprising a location array that includes a plurality of elements representing fractional pixel locations based on a spatial quantization factor, wherein each element of the location array points to a sample array of filter values.

19. (Original) The method of claim 18 wherein the filter is a member of a parametric family of filters and selecting the characteristics of the filter includes selecting parameter values for the filter according to the determined measure of scale.

20. (Original) The method of claim 18 wherein the data characterizing the geometric transformation includes data characterizing an affine transformation.

21. (Original) The method of claim 18 wherein the data characterizing the geometric transformation includes a minification factor.

22. (Original) The method of claim 18 wherein the data characterizing the geometric transformation includes a magnification factor.

23. – 25. (Canceled)

26. (Previously Presented) Software stored on a computer-readable medium comprising instructions for causing a computer to:

compute a filter for applying in resampling to a first image sampled on a first sample grid, including computing a spatially quantized representation of the filter wherein a degree of spatial quantization of the filter depends on one or more factors including a measure of scale relating the first sample grid and a desired sample grid; and

store the spatially quantized representation of the filter in a data structure comprising a location array that includes a plurality of elements representing fractional pixel locations based on a spatial quantization factor, wherein each element of the location array points to a sample array of filter values.

27. (Original) The software of claim 26 wherein the instructions further cause the computer to:

accept data characterizing a geometric transformation relating the first sample grid and the desired sample grid; and

compute the measure of scale from the data characterizing the geometric transformation.

28. (Original) The software of claim 26 wherein computing the filter includes selecting the number of spatial samples of the spatially quantized representation of the filter.

29. (Original) The software of claim 28 wherein computing the spatially quantized representation of the filter includes computing values of the filter each associated with one of a number of equal spatial domains of the filter.

30. (Original) The software of claim 26 wherein computing the filter for applying to the first image includes selecting a parametric family of filters.

31. (Original) The software of claim 30 wherein computing the filter for applying to the first image includes determining parameter values for the filter.

32. (Previously Presented) The software of claim 31 wherein determining the parameter values for the filter includes computing the parameter values based on factors including the measure of scale.

33. (Original) The software of claim 26 further comprising accepting a user input specifying a characteristic of the resampling, and using the user input in the computing of the filter for applying to the first image.

34. (Original) The software of claim 33 wherein accepting the user input includes accepting an input related to a characteristic of the desired image.

35. (Original) The software of claim 34 wherein the characteristic of the desired image includes a visual characteristic of the desired image.

36. (Original) The software of claim 33 wherein accepting the user input includes accepting an input related to a processing characteristic for the resampling.

37. (Original) The software of claim 36 wherein the input related to the processing characteristic includes an input related to a processing speed.

38. (Original) The software of claim 26 wherein the degree of spatial quantization of the filter depends on factors that further include characteristics of a computation device for performing the resampling.

39. (Original) The software of claim 38 wherein the characteristics of the computational device include a memory size characteristic.

40. (Original) The software of claim 39 wherein the memory size characteristic includes a cache memory size.

41. (Original) The software of claim 38 wherein the characteristics of the computational device include a processor characteristic.

42. (Previously Presented) A system for resampling a first image sampled on a first sample grid comprising:

means for computing a filter for applying to the first image, including means for computing a spatially quantized representation of the filter wherein a degree of spatial quantization of the filter depends on one or more factors including a measure of scale relating the first sample grid and a desired sample grid; and

means for storing the spatially quantized representation of the filter in a data structure comprising a location array that includes a plurality of elements representing fractional pixel locations based on a spatial quantization factor, wherein each element of the location array points to a sample array of filter values.

43. (Previously Presented) Software stored on a computer-readable medium comprising instructions for causing a computer to:

accept data characterizing a geometric transformation relating a first sample grid for a first image and a desired sample grid;

determine a measure of scale relating the first sample grid and the desired sample grid from the data characterizing the geometric transformation;

compute a filter for applying to the first image, including selecting characteristics of the filter according to the determined measure of scale and compute a spatially quantized representation of the filter, wherein a degree of spatial quantization of the filter depends on the determined measure of scale ; and

store the spatially quantized representation of the filter in a data structure comprising a location array that includes a plurality of elements representing fractional pixel locations based on a spatial quantization factor, wherein each element of the location array points to a sample array of filter values.

44. (Previously Presented) A system for resampling a first image sampled on a first sample grid comprising:

means for accepting data characterizing a geometric transformation relating the first sample grid and the desired sample grid;

means for determining a measure of scale relating the first sample grid and a desired sample grid from the data characterizing the geometric transformation;

means for computing a filter for applying to the first image, including means for selecting characteristics of the filter according to the determined measure of scale and computing a spatially quantized representation of the filter, wherein a degree of spatial quantization of the filter depends on the determined measure of scale; and

means for storing the spatially quantized representation of the filter in a data structure comprising a location array that includes a plurality of elements representing fractional pixel locations based on a spatial quantization factor, wherein each element of the location array points to a sample array of filter values.

45. – 46. (Canceled)

47. (Previously Presented) The system of claim 42, further comprising:  
means for accepting data characterizing a geometric transformation relating the first sample grid and the desired sample grid; and  
means for computing the measure of scale from the data characterizing the geometric transformation.

48. (Previously Presented) The system of claim 42, wherein the means for computing the filter further comprises means for selecting the number of spatial samples of the spatially quantized representation of the filter.

49. (Previously Presented) The system of claim 48, wherein the means for computing the spatially quantized representation of the filter further comprises means for computing values of the filter, each associated with one of a number of equal spatial domains of the filter.

50. (Previously Presented) The system of claim 42, wherein the means for computing the filter for applying to the first image further comprises means for selecting a parametric family of filters.

51. (Previously Presented) The system of claim 50, wherein the means for computing the filter for applying to the first image further comprises means for determining parameter values for the filter.

52. (Previously Presented) The system of claim 51, wherein the means for determining the parameter values for the filter is configured to compute the parameter values based on factors including the measure of scale.

53. (Previously Presented) The system of claim 42, further comprising:



means for accepting a user input specifying a characteristic of the resampling and means for using the user input in the computing of the filter for applying to the first image.

54. (Previously Presented) The system of claim 53, wherein the means for accepting the user input is configured to accept an input related to a characteristic of the desired image.

55. (Previously Presented) The system of claim 54, wherein the characteristic of the desired image includes a visual characteristic of the desired image.

56. (Previously Presented) The system of claim 53, wherein the means for accepting the user input is configured to accept an input related to a processing characteristic for the resampling.

57. (Previously Presented) The system of claim 56, wherein the input related to the processing characteristic includes an input related to a processing speed.

58. (Previously Presented) The system of claim 42, wherein the degree of spatial quantization of the filter depends on factors that further include characteristics of a computation device for performing the resampling.

59. (Previously Presented) The system of claim 58, wherein the characteristics of the computational device include a memory size characteristic.

60. (Previously Presented) The system of claim 59, wherein the memory size characteristic includes a cache memory size.

61. (Previously Presented) The system of claim 58, wherein the characteristics of the computational device include a processor characteristic.

62. (Previously Presented) The software of claim 43, wherein the filter is a member of a parametric family of filters and selecting characteristics of the filter includes selecting parameter values for the filter according to the determined measure of scale.

63. (Previously Presented) The software of claim 43, wherein the data characterizing the geometric transformation includes data characterizing an affine transformation.

64. (Previously Presented) The software of claim 43, wherein the data characterizing the geometric transformation includes a minification factor.

65. (Previously Presented) The software of claim 43, wherein the data characterizing the geometric transformation includes a magnification factor.

66. (Previously Presented) The system of claim 44, wherein the filter is a member of a parametric family of filters and the means for selecting characteristics of the filter is configured to select parameter values for the filter according to the determined measure of scale.

67. (Previously Presented) The system of claim 44, wherein the data characterizing the geometric transformation includes data characterizing an affine transformation.

68. (Previously Presented) The system of claim 44, wherein the data characterizing the geometric transformation includes a minification factor.

69. (Previously Presented) The system of claim 44, wherein the data characterizing the geometric transformation includes a magnification factor.